

SEQUENCE LISTING

SEQ ID NO: 1

LENGTH: 1447

TYPE: nucleic acid

5 STRANDEDNESS: single

TOPOLOGY: linear

MOLECULE TYPE: DNA

## SEQUENCE DESCRIPTION:

GAATTCGGG AACGAATAAT TATTATTAGC AATTATTAGC GATCAATAAT CTGATCACA TT 62

10 ATG GCA AGC ACT ATT AAG GAA GCA TTA TCA GTG GTG AGT GAA GAC CAG 110

TCC TTG TTT GAG TGT GGC TAC GGA TCG CCC CAC CTT GCA AAG ACA GAA 158

ATG ACA GGC TCC TCT TCC AGT GAA TAT GGG CAA ACA TCA AAG ATG AGC 206

CCG CGC GTT CCC CAG CAG GAC TGG TTA TCA CAG CCC CCG GGC AGA GTT 254

ACC ATT AAG ATG GAG TGT AAC CCA AAC CAG GTT AAT GGG TCA AGG AAT 302

15 TCA CCT GAT GAC TGC AGC GTG GCA AAA GGA GGG AAA ATG GTT AGC AGT 350

TCA GAC AAT GTT GGG ATG AAC TAT GGA AGC TAC ATG GAA GAG AAG CAT 398

ATT CCG OCT CCA AAT ATG ACA ACC AAT GAA CGA AGA GTT ATT GTG CCA 446

GCA GAT OCT ACG TTA TGG AGC ACA GAC CAT GTA CCG CAG TGG CTG GAG 494

TGG GCA GTG AAG GAG TAT GGT CTT CCA GAC GTG GAC ATC TTG TTG TTC 542

20 CAG AAC ATT GAT GGG AAA GAG TTG TGT AAA ATG ACC AAA GAT GAC TTC 590

CAG AGA CTC ACG CCG AGC TAT AAC GCA GAT ATC CTC CTG TCA CAC CTA 638

CAC TAC CTC AGA GAG AGA GGA GGC ACT TTT ATT TTT CCA AAT ACA TCA 686

GTT TAC CCA GAA GCA ACG CAA AGA ATA ACA ACA AGG CCA GAT TTA CCT 734

TAT GAG CAA GCG AGG AGA TCA GCG TGG ACG AGT CAC AGC CAT CCC ACT 782

25 CAG TCA AAA GCT ACC CAA CCA TCA TCT TCA ACA GTG CCC AAA ACA GAA 830

GAC CAG CGT CCT CAG TTA GAT OCT TAT CAG ATT CTT GGA CCG ACC AGC 878

AGC CGT CTT GCA AAT CCA GGG AGT GGG CAG ATA CAG CTA TGG CAG TTC 926  
 CTA CTG GAG CTT CTG TCG GAC AGC TCC AAC TCC AAC TGC ATC ACC TGG 974  
 GAG GGC ACA AAT GGG GAG TTC AAG ATG ACA GAC CCT GAT GAA GTG GCT 1022  
 OGG CGT TGG GGA GAG AGG AAA AGC AAA CCT AAC ATG AAC TAT GAC AAA 1070  
 CTC AGC CGT GCA CTT CGC TAC TAC TAT GAC AAA AAT ATT ATG ACT AAA 1118  
 GTT CAT GGT AAA CGC TAT GGC TAC AAA TTT GAT TTC CAC GGA ATC GCT 1166  
 CAG GCC CTC CAG OCT CAC OCT CCA GAA TCA TCC ATG TAC AAA TAC CCA 1214  
 TCA GAC CTC CCC TAC ATG AGT TCC TAC CAT GCA CAC CCC CAG AAG ATG 1262  
 AAC TTT GTA GCT CCC CAT CCC CCT GCT TTG CCC GTA ACC TCA TCC AGC 1310  
 TTT TTT GCT GCC OCT AAT CCA TAC TGG AAT TCA CCA ACT GGA GGC ATC 1358  
 TAC CCC AAT ACC AGG CTG CCA GCT GCT CAT ATG OCT TCC CAT CTT GGC 1406  
 ACC TAC TAC TAA GTG GGGAAAGAAA GAAAGOGCCA AGAAAA 1447

SEQ ID NO: 2

LENGTH: 451

TYPE: amino acid

TOPOLOGY: linear

MOLECULE TYPE: peptide

SEQUENCE DESCRIPTION:

Met Ala Ser Thr Ile Lys Glu Ala Leu Ser Val Val Ser Glu Asp Gln 16  
 Ser Leu Phe Glu Cys Ala Tyr Gly Ser Pro His Leu Ala Lys Thr Glu 32  
 Met Thr Ala Ser Ser Ser Ser Glu Tyr Gly Gln Thr Ser Lys Met Ser 48  
 Pro Arg Val Pro Gln Gln Asp Trp Leu Ser Gln Pro Pro Ala Arg Val 64

Thr Ile Lys Met Glu Cys Asn Pro Asn Gln Val Asn Gly Ser Arg Asn 80  
 Ser Pro Asp Asp Cys Ser Val Ala Lys Gly Gly Lys Met Val Ser Ser 96  
 Ser Asp Asn Val Gly Met Asn Tyr Gly Ser Tyr Met Glu Glu Lys His 112  
 Ile Pro Pro Pro Asn Met Thr Thr Asn Glu Arg Arg Val Ile Val Pro 128  
 Ala Asp Pro Thr Leu Trp Ser Thr Asp His Val Arg Gln Trp Leu Glu 144  
 Trp Ala Val Lys Glu Tyr Gly Leu Pro Asp Val Asp Ile Leu Leu Phe 160  
 Gln Asn Ile Asp Gly Lys Glu Leu Cys Lys Met Thr Lys Asp Asp Phe 176  
 Gln Arg Leu Thr Pro Ser Tyr Asn Ala Asp Ile Leu Leu Ser His Leu 192  
 His Tyr Leu Arg Glu Arg Gly Ala Thr Phe Ile Phe Pro Asn Thr Ser 208  
 Val Tyr Pro Glu Ala Thr Gln Arg Ile Thr Thr Arg Pro Asp Leu Pro 224  
 Tyr Glu Gln Ala Arg Arg Ser Ala Trp Thr Ser His Ser His Pro Thr 240  
 Gln Ser Lys Ala Thr Gln Pro Ser Ser Ser Thr Val Pro Lys Thr Glu 256  
 Asp Gln Arg Pro Gln Leu Asp Pro Tyr Gln Ile Leu Gly Pro Thr Ser 272  
 Ser Arg Leu Ala Asn Pro Gly Ser Gly Gln Ile Gln Leu Trp Gln Phe 288  
 Leu Leu Glu Leu Leu Ser Asp Ser Ser Asn Ser Asn Cys Ile Thr Trp 304  
 Glu Gly Thr Asn Gly Glu Phe Lys Met Thr Asp Pro Asp Glu Val Ala 320  
 Arg Arg Trp Gly Glu Arg Lys Ser Lys Pro Asn Met Asn Tyr Asp Lys 336  
 Leu Ser Arg Ala Leu Arg Tyr Tyr Tyr Asp Lys Asn Ile Met Thr Lys 352  
 Val His Gly Lys Arg Tyr Ala Tyr Lys Phe Asp Phe His Gly Ile Ala 368  
 Gln Ala Leu Gln Pro His Pro Pro Glu Ser Ser Met Tyr Lys Tyr Pro 384  
 Ser Asp Leu Pro Tyr Met Ser Ser Tyr His Ala His Pro Gln Lys Met 400  
 Asn Phe Val Ala Pro His Pro Pro Ala Leu Pro Val Thr Ser Ser Ser 416  
 Phe Phe Ala Ala Pro Asn Pro Tyr Trp Asn Ser Pro Thr Gly Gly Ile 432  
 Tyr Pro Asn Thr Arg Leu Pro Ala Ala His Met Pro Ser His Leu Gly 448  
 Thr Tyr Tyr 451

SEQ ID NO: 3

LENGTH: 1528

TYPE: nucleic acid

STRANDEDNESS: single

5 TOPOLOGY: linear

MOLECULE TYPE: DNA

SEQUENCE DESCRIPTION:

10 GAATTCGCG AACGAATAAT TATTATTAGC AATTATTAGC GATCAATAAT CTGATCACA TT 62  
 ATG GCA AGC ACT ATT AAG GAA GCA TTA TCA GIG GIG AGT GAA GAC CAG 110  
 TCC TTG TTT GAG TGT GCC TAC GGA TCG CCC CAC CTT GCA AAG ACA GAA 158  
 ATG ACA GCC TCC TCT TCC AGT GAA TAT GGG CAA ACA TCA AAG ATG AGC 206  
 CCG CGC GGT CCC CAG CAG GAC TGG TTA TCA CAG CCC CCG GCC AGA GGT 254  
 15 ACC ATT AAG ATG GAG TGT AAC CCA AAC CAG GGT AAT GGG TCA AGG AAT 302  
 TCA CCT GAT GAC TGC AGC GIG GCA AAA GGA GGG AAA ATG GGT AGC AGT 350  
 TCA GAC AAT GGT GGG ATG AAC TAT GGA AGC TAC ATG GAA GAG AAG CAT 398  
 AAT CCG CCT CCA AAT ATG ACA ACC AAT GAA CGA AGA GGT ATT GIG CCA 446  
 GCA GAT CCT ACG TTA TGG AGC ACA GAC CAT GTA CCG CAG TGG CTG GAG 494  
 20 TGG GCA GIG AAG GAG TAT GGT CTT CCA GAC GIG GAC ATC TTG TTG TTC 542  
 CAG AAC ATT GAT GCG AAA GAG TTG TGT AAA ATG ACC AAA GAT GAC TTC 590  
 CAG AGA CTC ACG CCG AGC TAT AAC GCA GAT ATC CTC CTG TCA CAC CTA 638  
 CAC TAC CTC AGA GAG ACT CCT CTT CCA CAT TTG ACT TCA GAT GAT GGT 686  
 GAT AAG GCC TTA CAA AAC TCT CCA CCG TTA ATG CAT GCT AGA AAC ACA 734  
 25 GGA GGA GCC ACT TTT ATT TTT CCA AAT ACA TCA GGT TAC CCA GAA GCA 782  
 ACG CAA AGA ATA ACA ACA AGG CCA GAT TTA OCT TAT GAG CAA GCG AGG 830

AGA TCA GCG TGG ACG AGT CAC AGC CAT CCC ACT CAG TCA AAA GCT ACC 878  
 CAA CCA TCA TCT TCA ACA GTG CCC AAA ACA GAA GAC CAG CGT CCT CAG 926  
 TTA GAT CCT TAT CAG ATT CTT GGA CCG ACC AGC AGC CGT CTT GCA AAT 974  
 CCA GGG AGT GGG CAG ATA CAG CTA TGG CAG TTC CTA CTG GAG CTT CTG 1022  
 TCG GAC AGC TOC AAC TOC AAC TGC ATC ACC TGG GAG GGC ACA AAT GGG 1070  
 GAG TTC AAG ATG ACA GAC OCT GAT GAA GTG GCT CCG CGT TGG GGA GAG 1118  
 AGG AAA AGC AAA OCT AAC ATG AAC TAT GAC AAA CTC AGC CGT GCA CTT 1166  
 CGC TAC TAC TAT GAC AAA AAT ATT ATG ACT AAA GTT CAT GGT AAA CGC 1214  
 TAT GOC TAC AAA TTT GAT TTC CAC GGA ATC GCT CAG GOC CTC CAG OCT 1262  
 CAC OCT CCA GAA TCA TOC ATG TAC AAA TAC CCA TCA GAC CTC CCC TAC 1310  
 ATG AGT TOC TAC CAT GCA CAC CCC CAG AAG ATG AAC TTT GTA GCT CCC 1358  
 CAT CCC OCT GCT TTG CCC GTA ACC TCA TOC AGC TTT TTT GCT GOC OCT 1406  
 AAT CCA TAC TGG AAT TCA CCA ACT GGA GGC ATC TAC CCC AAT ACC AGG 1454  
 CTG CCA GCT GCT CAT ATG OCT TOC CAT CTT GGC ACC TAC TAC TAA GTG 1502  
 GGGAAAGAAA GAAAGGCCCA AGAAAA 1528

SEQ ID NO: 4

LENGTH: 478

TYPE: amino acid

TOPOLOGY: linear

MOLECULE TYPE: peptide

SEQUENCE DESCRIPTION:

Met Ala Ser Thr Ile Lys Glu Ala Leu Ser Val Val Ser Glu Asp Gln 16

Ser Leu Phe Glu Cys Ala Tyr Gly Ser Pro His Leu Ala Lys Thr Glu 32  
 Met Thr Ala Ser Ser Ser Ser Glu Tyr Gly Gln Thr Ser Lys Met Ser 48  
 Pro Arg Val Pro Gln Gln Asp Trp Leu Ser Gln Pro Pro Ala Arg Val 64  
 Thr Ile Lys Met Glu Cys Asn Pro Asn Gln Val Asn Gly Ser Arg Asn 80  
 Ser Pro Asp Asp Cys Ser Val Ala Lys Gly Gly Lys Met Val Ser Ser 96  
 Ser Asp Asn Val Gly Met Asn Tyr Gly Ser Tyr Met Glu Glu Lys His 112  
 Ile Pro Pro Pro Asn Met Thr Thr Asn Glu Arg Arg Val Ile Val Pro 128  
 Ala Asp Pro Thr Leu Trp Ser Thr Asp His Val Arg Gln Trp Leu Glu 144  
 Trp Ala Val Lys Glu Tyr Gly Leu Pro Asp Val Asp Ile Leu Leu Phe 160  
 Gln Asn Ile Asp Gly Lys Glu Leu Cys Lys Met Thr Lys Asp Asp Phe 176  
 Gln Arg Leu Thr Pro Ser Tyr Asn Ala Asp Ile Leu Leu Ser His Leu 192  
 His Tyr Leu Arg Glu Thr Pro Leu Pro His Leu Thr Ser Asp Asp Val 208  
 Asp Lys Ala Leu Gln Asn Ser Pro Arg Leu Met His Ala Arg Asn Thr 224  
 Gly Gly Ala Thr Phe Ile Phe Pro Asn Thr Ser Val Tyr Pro Glu Ala 240  
 Thr Gln Arg Ile Thr Thr Arg Pro Asp Leu Pro Tyr Glu Gln Ala Arg 256  
 Arg Ser Ala Trp Thr Ser His Ser His Pro Thr Gln Ser Lys Ala Thr 272  
 Gln Pro Ser Ser Ser Thr Val Pro Lys Thr Glu Asp Gln Arg Pro Gln 288  
 Leu Asp Pro Tyr Gln Ile Leu Gly Pro Thr Ser Ser Arg Leu Ala Asn 304  
 Pro Gly Ser Gly Gln Ile Gln Leu Trp Gln Phe Leu Leu Glu Leu Leu 320  
 Ser Asp Ser Ser Asn Ser Asn Cys Ile Thr Trp Glu Gly Thr Asn Gly 336  
 Glu Phe Lys Met Thr Asp Pro Asp Glu Val Ala Arg Arg Trp Gly Glu 352  
 Arg Lys Ser Lys Pro Asn Met Asn Tyr Asp Lys Leu Ser Arg Ala Leu 368  
 Arg Tyr Tyr Tyr Asp Lys Asn Ile Met Thr Lys Val His Pro Pro Glu 384  
 Ser Ser Met Tyr Lys Tyr Pro Ser Asp Leu Pro Tyr Met Ser Ser Tyr 400  
 His Gly Lys Arg Tyr Ala Tyr Lys Phe Asp Phe His Gly Ile Ala Gln 416  
 Ala Leu Gln Pro His Ala His Pro Gln Lys Met Asn Phe Val Ala Pro 432

His Pro Pro Ala Leu Pro Val Thr Ser Ser Ser Phe Phe Ala Ala Pro 448  
 Asn Pro Tyr Trp Asn Ser Pro Thr Gly Gly Ile Tyr Pro Asn Thr Arg 464  
 Leu Pro Ala Ala His Met Pro Ser His Leu Gly Thr Tyr Tyr 478

5

SEQ ID NO: 5

LENGTH: 23

TYPE: nucleic acid

STRANDEDNESS: single

10

TOPOLOGY: linear

MOLECULE TYPE: DNA

SEQUENCE DESCRIPTION:

ATCTTGATCA CATTATGGCA AGC 23

15

SEQ ID NO: 6

LENGTH: 25

TYPE: nucleic acid

STRANDEDNESS: single

TOPOLOGY: linear

20

MOLECULE TYPE: DNA

SEQUENCE DESCRIPTION:

CACATTATGG CAAGCACTAT TAAGG 25

25

SEQ ID NO: 7

LENGTH: 25

TYPE: nucleic acid

STANDEDNESS: single

TOPOLOGY: linear

MOLECULE TYPE: DNA

SEQUENCE DESCRIPTION:

CACCTAGTAG TAGGTGCCAA GATGG 25

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CGS 97-01